

II. Amendments to the Claims

Applicants amend claims 21–28 and 39–40 as set forth below in a complete listing of all of the claims of the application. The status of each claim is noted parenthetically in accordance with 37 C.F.R. Section 1.121. This listing of claims will replace all prior revisions and listings of claims in the application.

Listing of Claims

Claims 1–20. (Canceled)

Claim 21. (Currently Amended) A method for grafting an unsaturated monomer onto a polysaccharide guar comprising the steps of: (1) forming a mixture comprised of an unsaturated monomer having a functional group selected from carboxylate, phosphonate, sulfonate and quaternary ammonium and a water soluble or water dispersible polysaccharide guar; drying the mixture and (3) irradiating the mixture with an amount of electron beam radiation sufficient to form an unsaturated monomer-water soluble or water dispersible polysaccharide guar graft copolymer, wherein the graft copolymer is depolymerized to a molecular weight lower than the molecular weight of the ungrafted polysaccharide guar, and the polysaccharide guar in the copolymer has a molecular weight of no more than between 100,000 and 700,000 Daltons.

Claim 22. (Currently Amended) The method of claim 21, wherein the unsaturated monomer is a vinyl monomer having a functional quaternary ammonium group.

Claim 23. (Currently Amended) The method of claim 21, wherein the polysaccharide is selected from the group consisting of guar, cationic guar, nonionic guar, locust bean gum, tara gum, amylose, amylepectin, xanthan and xanthan gum is selected from the group consisting of guar gum and guar powder.

Claim 24. (Currently Amended) The method of claim 22 21, wherein the polysaccharide is guar is quar powder.

Claim 25. (Currently Amended) The method of claim 22 21, wherein the polysaccharide guar is a cellulose-containing at least one functional group guar gum.

Claim 26. (Currently Amended) The method of claim 22 21, wherein the functional group is a carboxylate, a phosphonate, or a sulfonate group.

Claim 27. (Currently Amended) The method of claim 22 21, wherein the vinyl monomer is methacrylamidopropyltrimethylammonium chloride.

Claim 28. (Currently Amended) The method of claim 22 21, wherein the functional group is a quaternary ammonium group.

Claims 29–38. (Canceled)

Claim 39. (Currently Amended) A method for grafting an unsaturated monomer onto a polysaccharide guar comprising the steps of: (1) forming a mixture comprised of an unsaturated monomer having a functional group selected from carbonate, sulfate, phosphate and quaternary ammonium and a water soluble or water dispersible polysaccharide guar; (2) drying the mixture in the air and (3) irradiating the mixture with an amount of electron beam radiation sufficient to form an unsaturated monomer-water soluble or water dispersible polysaccharide guar graft copolymer, wherein the graft copolymer is depolymerized to a molecular weight lower than the molecular weight of the ungrafted polysaccharide guar, and the polysaccharide guar in the copolymer has a molecular weight of no more than between 100,000 and 700,000 Daltons.

Claim 40. (Currently Amended) A method for grafting an unsaturated monomer onto a polysaccharide guar comprising the steps of: (1) forming a mixture comprised of an unsaturated monomer having a functional group selected from carboxylate, phosphonate, sulfonate and quaternary ammonium and a water soluble or water dispersible polysaccharide guar; (2) drying the mixture in a vacuum and (3) irradiating the mixture with an amount of electron beam radiation sufficient to form an unsaturated monomer-water soluble or water dispersible polysaccharide guar graft copolymer, wherein the graft copolymer is depolymerized to a molecular weight lower than the molecular weight of the ungrafted polysaccharide guar, and the polysaccharide guar in the copolymer has a molecular weight of no more than between 100,000 and 700,000 Daltons.